

# THE INSTITUTE REPORT



From the  
VETERINARY VIRUS RESEARCH INSTITUTE  
Cornell University, Ithaca, New York

October, 1956

Volume 6



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## THE INSTITUTE REPORT

THE Institute Report is prepared for all who help make possible our research program. These donors are listed individually under "Acknowledgments." This Report is planned for them each year as an attempt to give a brief summary of the progress we have made.

Some of our donors live a great distance from New York State and cannot visit here easily. This year, therefore, our Report will try to give them a pictorial impression of work in the laboratories of the Institute, with particular attention to the Cornell Research Laboratory for Diseases of Dogs.

One of the most important events during the past year cannot be photographed, but all who are interested in the Institute will be happy to learn that its future operations became more assured with the generous gift of \$250,000.00 from the estate of the late Alfred H. Caspary. The gift was made to Cornell University to help support the work of the Veterinary Virus Research Institute. Since the grant was not limited to small, specific projects, this unusually liberal gift means even more to the Institute than if use of the fund had been restricted.

We hope that this grant will form the nucleus of a reserve fund, which, barring emergencies, can in time become large enough to endow research professorships in the Institute on the same permanent basis as other similar positions in the University. It is an important event in the history of the Institute.

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## MESSAGE FROM THE DIRECTOR

In my message this year, I hope to give you a brief summary of the various aspects of our Institute development, covering our scientific progress, educational activities and current financial status.

Our knowledge of disease accumulates slowly and often seems to consist of apparently unrelated bits of information. After a time, enough bits of information are available for definite principles to be formulated and put into practical use. Then suddenly, we seem to make great progress. We realized such a peak last year.

Those of you who have followed our work closely from its beginning six years ago will recall the bit of information we reported about the simultaneous infection of dogs with distemper virus and infectious hepatitis virus. At that time we predicted that since dual infection was possible with these two diseases, dual protection should also be possible. We then formulated our earliest dual vaccine, which worked well under the conditions of test, and was the first vaccine for animals which combined two different live viruses for simultaneous protection against two different diseases. We used distemper virus from strains cultivated and attenuated in eggs, and, because infectious hepatitis virus is host specific and will not grow in eggs, unattenuated virus had to be used and its severity controlled by antiserum. Now, through the adaptation of tissue culture methods, canine infectious hepatitis virus can be grown and attenuated in flasks containing pig kidney as the source of living cells for the virus. This means, of course, that our newer vaccine will contain attenuated viruses only and should be even better than the older one.

To relate bits of information into practical means of animal protection we have two principles: (1) viral attenuation, to make a safe, but effective, vaccine, and (2) the combination of more than one attenuated disease agent into a single vaccine. This obviously is better for the individual, since it is treated only once and yet acquires protection against more than one disease. Perhaps a third principle, not scientific but economic, might be postulated in that better protection will be given more animals. Furthermore, this dual vaccine for dogs might be made to include leptospirosis and other agents as well, if this seems indicated by further study. Similar progress has been made in our studies of cattle vaccines, and still others are possible, now that we have proven scientific principles on which to build.



In each of our five annual reports, we have included the names of current graduate students and visiting investigators. It is interesting to note that thus far we have had a total of fifteen persons from ten different countries. Some stay with us a year, others for three or four years, before leaving for positions elsewhere or to return to their own country. From time to time, we hear reports of their successes. All seem busy, each digging for those bits of information that will mean future progress. While here, they have helped a great deal to broaden our viewpoint. In going elsewhere, they establish new foci of research similar to ours, which will help even more in the eventual control of disease.

We also learn something from the constant stream of casual visitors who come here. Some are from this country and many are from other parts of the world. Today, for example, I have talked with a veterinary parasitologist and his wife from Brazil, a dog owner from New Jersey, a virologist from Iran, a small animal practitioner from Bangkok, Thailand, and a research physician from Western Reserve Medical School who is observing our work for a few weeks. All of these people have questions, but they also contribute information of their own which enlarges our perspective and, without doubt, helps our work.

Our financial reserves continue to grow. The Caspary gift received this past year helped tremendously. These funds are being maintained for the Institute by Cornell University in the form of an endowment, which last year earned interest at the rate of 5 per cent. Naturally, such reserves help to stabilize and enhance the laboratory operation.

In September, 1956, the first edition was published by Bantam Books, Inc. of *The Common Sense Book of Puppy and Dog Care*. The author, Mr. Harry Miller, Director of the Gaines Dog Research Center, has most generously contributed all royalties from this important new book to the Cornell Research Laboratory for Diseases of Dogs.

We are thankful to all of you for your financial support. Several persons have been unusually helpful by giving generously of their time as well. I wish to acknowledge my gratitude to Colonel and Mrs. Lee Garnett Day, Mrs. Geraldine R. Dodge, Mr. George Murnane, Mr. John M. Olin, and Mrs. Elizabeth I. Poe. Without their thoughtful advice, our laboratory would not be in its favorable position.

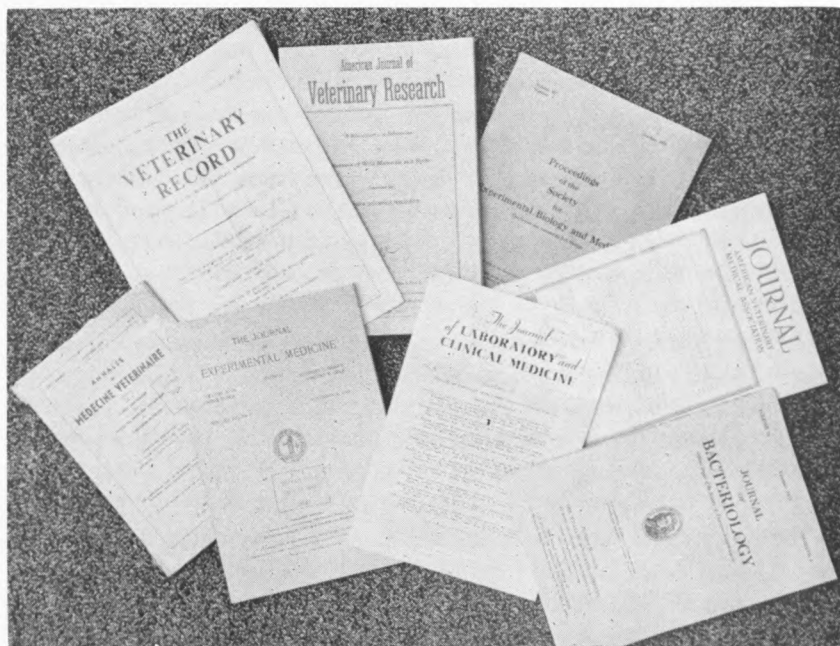


The Laboratory and office buildings of the Virus Research Institute on Snyder Hill can be seen in the frontispiece. At the left is the main entrance to the business offices and library. In the center is our Microbiology Building, provided last year by Colonel and Mrs. Lee Garnett Day and Mr. John M. Olin. In the right background is a portion of the Isolation Building provided by the State of New York for work on infectious diseases of farm animals.

In the right foreground is the Cornell Research Laboratory for Diseases of Dogs. In the immediate foreground can be seen a road leading up to the Gaines Isolation Kennel, where our disease-free dogs are reared. A furnace with gas heat has just been installed in this kennel to prevent sudden chilling and discomfort of puppies in the event of power failure during winter storms.

The bottom picture shows a kennel, modeled closely after ours, built at East Alton, Illinois, by Mr. John M. Olin. It is in constant operation as a breeding kennel. It serves as one of the important field stations for the Institute, where the practicality of our laboratory findings are tested.





*Some of the journals in our library. The scientific staff must keep informed on recent happenings in other laboratories throughout the world.*

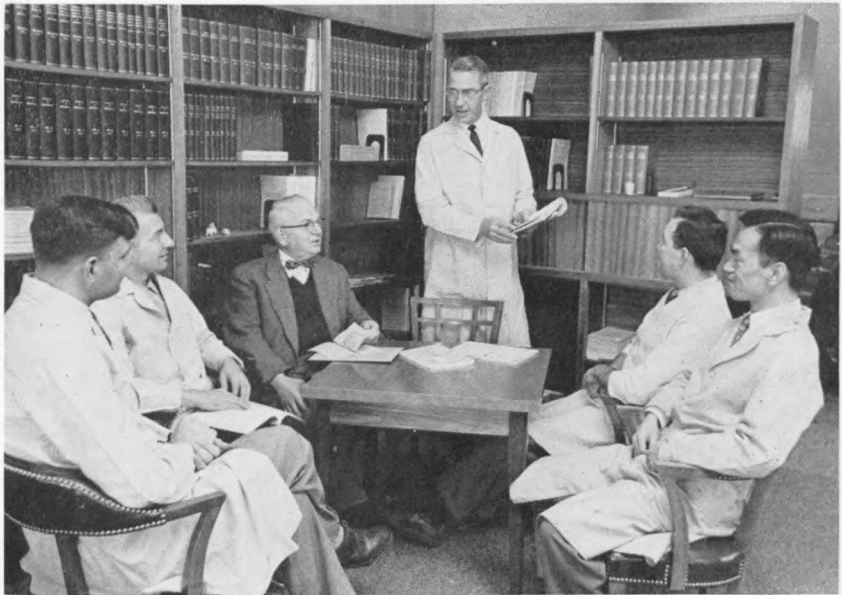
The long term objective of better understanding of infectious diseases in general underlies our research on isolation of new infectious agents and development of new vaccines for such diseases as distemper, infectious hepatitis, leptospirosis, virus diarrhea, hog cholera, feline pneumonitis, and others.

As discussed in previous Institute Reports and in our Laboratory Reports we are continuing our work on protection of the newborn by colostrum from an immune mother and also on the relation of age to vaccination.

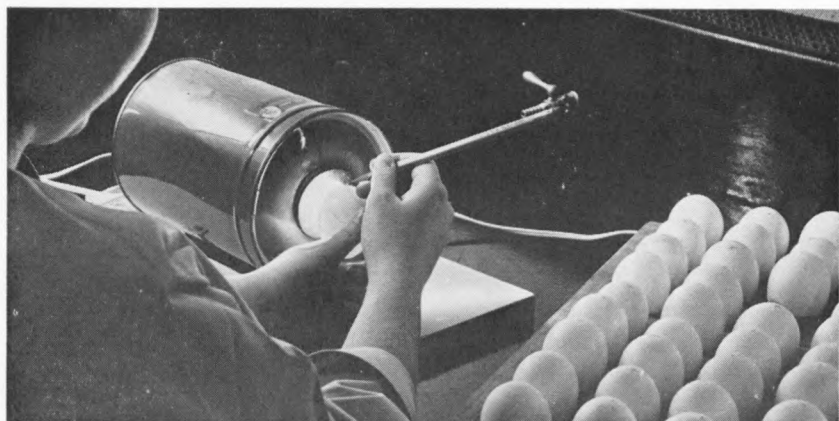
We hope that by studying many of the different diseases found occurring naturally in many different species of both domestic and wild animals, some fundamental facts will be recognized that can be applied successfully in the control of all diseases in all species.

One of these most basic findings is being analyzed and considered in many studies: that response to infectious disease varies with the individual, and also varies in each individual from time to time. Successful control of disease cannot be solely a matter of vaccination and then forgetting. In diseases of human beings, a vaccine that protects from 60 to 70 per cent of the cases is usually considered a successful product. In distemper of dogs, a survey we are making shows that commercial vaccines available today are successful in more than 90 per cent of the cases. But we are even more interested in the ones that are not successful, to learn and analyze the reasons for such failure. In the past, this has commonly been called a "vaccine failure," and some persons have even thought that the veterinarian might have been at fault.

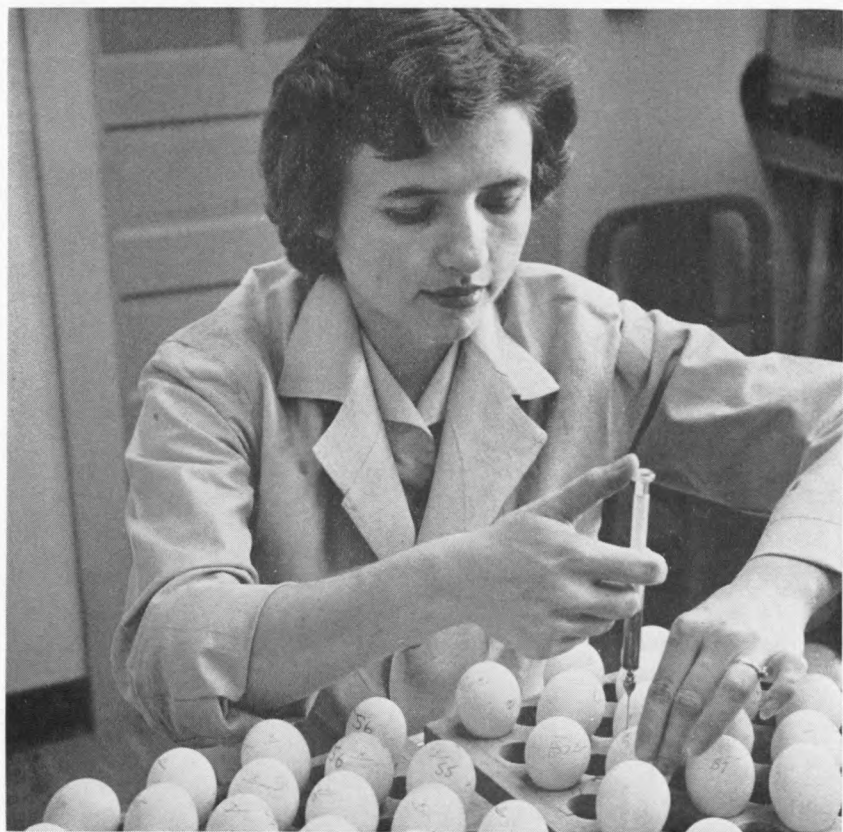
We are finding that in many such cases the actual failure is in the body cells of the individual—something present, or something lacking, in the chemical make-up at the time—representing an abnormal condition that interferes with immunity. Proper diet, or nutrition, is one such factor that we are studying in minute chemical detail, in its relation to susceptibility, infection, and control of disease.



*Some of the staff members at an informal conference in the library.*



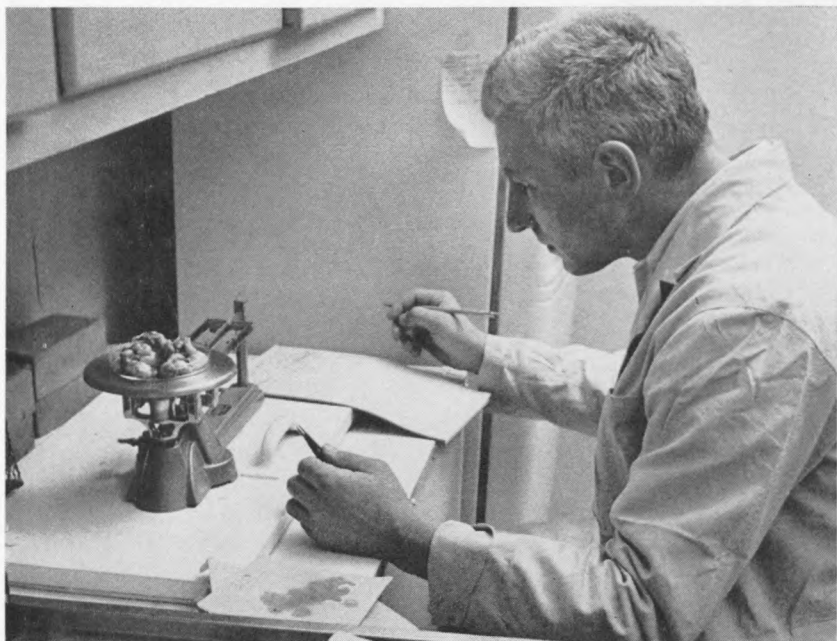
*Fertile eggs must be marked properly for inoculation.*



*Inoculating eggs. One egg can produce enough vaccine for 20 dogs.*

Not all viruses prefer the same tissue or the same species of animal. The virus of hog cholera is found naturally only in swine, and canine infectious hepatitis occurs only in dogs and closely related species; such viruses are called host specific. Distemper is less specific and affects dogs, foxes, raccoons, and ferrets, for instance, while rabies virus can infect any mammal yet studied, including bats.

All viruses are alike in requiring living cells for multiplication. A number of viruses, including distemper and rabies, as well as the various leptospiras, can be grown in fertile eggs if inoculated into the spot where they prefer to grow and then maintained at the right temperature.



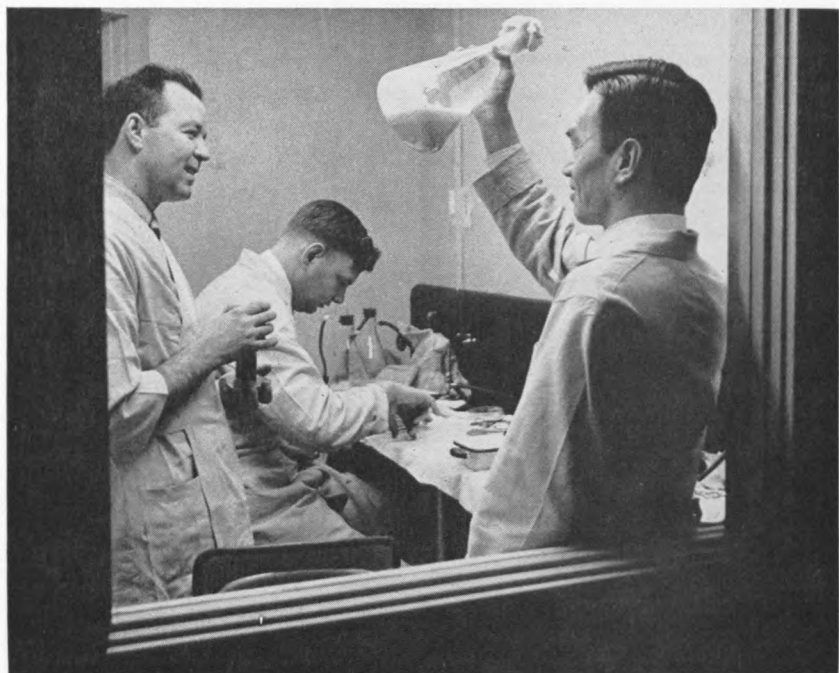
*Weighing and studying embryos from inoculated eggs.*

Host specific viruses that could not be grown successfully in eggs formerly required the use of infected animals to supply vaccine material. Many of these viruses can now be grown in tissue culture. Bits of tissue are kept alive through the addition of proper nutrient solutions. This supplies cells suitable for the growth of some viruses.



*Preparing tissue for tissue culture. Through the cooperation of a number of packing houses, fresh organs and glandular tissue are obtained for this important work.*





*Examining a flask of material in the tissue culture room.*



*Tubes of tissue cultures, inoculated with canine infectious hepatitis virus. One such tube will produce enough virus to vaccinate 300 dogs.*



For greater stability after the vaccine is prepared, all moisture is removed by vacuum drying. The vaccine can then be stored in small vials. In the picture below, each vial contains distemper virus grown in eggs and canine infectious hepatitis virus grown in tissue culture. One vial will immunize six dogs.



*Sealing vials of vaccine after completion of the vacuum process.*

The importance of our disease-free animals cannot be overemphasized in any study of the protection actually afforded by vaccines. In addition to our kennel of beagles, we also have a herd of disease-free cattle and of swine, as well as ordinary laboratory animals. These disease-free animals have never been exposed to disease, and, as a result, have no immunity except that given by the vaccine.

Following vaccination, from time to time they are rechecked serologically to test the level of their antibodies.



*A blood test can reveal whether or not antibodies are present for protection against disease.*

PUBLICATIONS FROM THE VETERINARY VIRUS  
RESEARCH INSTITUTE

- (1) Baker, J. A., Richards, Mabel G., Brown, A. L., and Rickard, C. G., Infectious Hepatitis in Dogs, Proc. A.V.M.A. 87th Ann. Meeting, 1950, 242-248.
- (2) ———, Feline Pneumonitis, Proc. A.A.H.A., 1951, 273-276.
- (3) ———, Leptospirosis in Cattle, Proc. Ohio State Vet. Con., 1951, 50-51.
- (4) ———, Recent Advances in Virus Diseases of Dogs, *ibid*, 54-58.
- (5) ———, Infectious Disease in Relation to Nutrition, Proc. Am. Feed Mfg. Assn., 1951.
- (6) ———, Report from the Cornell Research Laboratory for Diseases of Dogs, Proc. A.A.H.A., 1951, 163-164.
- (7) ———, Recent Findings in Infectious Diseases, Gaines Veterinary Symposium, Oct. 24, 1951.
- (8) ———, The New Hog Cholera Vaccines, Proc. A.V.M.A. 88th Ann. Meeting, 1951.
- (9) ———, Rinderpest, 57th Ann. Proc. U.S. Livestock Sanitary Assoc., Sept., 1953, 192-196.
- (10) ———, Immunity to Virus Diseases in Dogs, Proc. A.A.H.A., 1953.
- (11) ———, and York, C. J., Virus Diseases. Advances in Veterinary Science, Academic Press, Inc., 1953, 1, 49-74.
- (12) ———, York, C. J., Gillespie, J. H., and Mitchell, G. B., Virus Diarrhea in Cattle, Amer. Jour. Vet. Res., 1954, 15, 525-531.
- (13) ———, Leptospirosis in Dogs and Its Prevention, Gaines Veterinary Symposium, October 20, 1954.
- (14) ———, Expanding Knowledge of Viruses, Vet. Med., 50, 1955.
- (15) ———, Cattle Diseases (a chapter entitled "Leptospirosis"), published by American Veterinary Publications, Inc., Evanston, Ill. 1956.
- (16) ———, Psittacosis (a chapter entitled "Infections in Mammals caused by Members of the Psittacosis Group of Viruses"), published by Rutgers Press, New Brunswick, N.J., 1956.
- (17) ———, (with C. J. York), *Miyagawanella bovis* Infection in Calves. Annals of N.Y. Acad. of Sc., 1956, 66, 210-214. Article 1, Epidemic and Endemic Diarrheal Diseases of the Infant.
- (18) Baker, Dudley, Infectious Diseases of Dogs, Amer. Kennel Gazette, Dec., 1953-Mar., 1955.
- (19) ———, Immunity, Vaccines and Vaccine Failures. Laboratory Report I, June, 1955.
- (20) ———, Leptospirosis. Laboratory Report II, April, 1956.
- (21) Burnstein, T., Studies on the Role of the Adrenal Gland in Resistance Against the Toxin of the Feline Pneumonitis Virus. A Thesis, Cornell, 1951.
- (22) ———, Leptospirosis in Swine. A Thesis, Cornell, 1953.
- (23) ———, and Baker, J. A., Leptospirosis in Swine Caused by *Leptospira pomona*, Jour. Inf. Dis., 1954, 94, 53-64.
- (24) Celiker, A., and Gillespie, J. H., The Effect of Temperature, pH, and Certain Chemicals on Egg-cultivated Distemper Virus. Cornell Vet., 1954, 44, 276-280.
- (25) Erturk, Omer, A Comparison of the Effectiveness of Certain Antibiotics on *Miyagawanella Felis* Virus in Chick Embryo. The Cornell Vet., 1956, 46, 355-360.
- (26) Gillespie, J. H., and Baker, J. A., Experimental Q Fever in Cats. Amer. Jour. Vet. Res. 1952, 13, 91-94.
- (27) ———, Clinical Features of Infectious Canine Hepatitis. Proc. A.V.-M.A. 89th Ann. Meeting, 1952, 224-225.

- (28) ———, Robinson, J. I., and Baker, J. A., Dual Infection of Dogs with Distemper Virus and Virus of Infectious Canine Hepatitis. *Proc. Soc. Exp. Biol. and Med.*, 1952, 81, 461-463.
- (29) ———, Preliminary Studies on the Problem of Encephalitis of Dogs. *North Amer. Vet.*, 1951, 32, 837-838.
- (30) ———, Some Preliminary Studies on the Problem of Encephalitis in Dogs. *Proc. A.A.H.A.*, 1951, 164-167.
- (31) ———, Encephalitis in Dogs Produced by Distemper Virus. *Amer. Jour. Vet. Res.*, 1956, 17, 103-108.
- (32) ———, Baker, J. A. and Poppensiek, G. C., Diarrhea in Puppies Caused by Distemper Virus. *Annals of N. Y. Acad. of Sc.*, 1956, 66, 204-209.
- (33) ———, Lee, K. M., and Baker, J. A., Infectious Bovine Rhinotracheitis in Cattle and in Tissue Culture. To be published.
- (34) Greig, A. S., A Pleuropneumonia-like Organism from Dogs, A Thesis, Cornell, 1953.
- (35) Lee, K. M., Transmissible Gastroenteritis in Swine, A Thesis, Cornell, 1952.
- (36) ———, Tissue Culture and Animal Viruses, Gaines Veterinary Symposium, Oct. 19, 1955.
- (37) ———, Propagation of Transmissible Gastroenteritis Virus in Tissue Culture. *Annals of N.Y. Acad. of Sc.*, 1956, 66, 191-195.
- (38) McBee, L. A., A Hitherto Undescribed Organism Infectious for Deer Mice, A Thesis, Cornell, 1952.
- (39) Moro, M., The Presence and Persistence of the Virus of Transmissible Gastroenteritis in Pigs, A Thesis, Cornell, 1954.
- (40) Poppensiek, G. C., and Baker, J. A., Persistence of Virus in Urine as Factor in Spread of Infectious Hepatitis in Dogs, *Proc. Soc. Exp. Biol. & Med.*, 1951, 77, 279-281.
- (41) ———, Infectious Hepatitis, Gaines Veterinary Symposium, Oct. 22, 1952.
- (42) ———, Immunology of Infectious Canine Hepatitis, *Proc. A.V.M.A. 89th Ann. Meeting*, 1952, 228-229.
- (43) ———, Virus Diseases of Dogs, *Vet. Med.*, 1952, 47, 282-284.
- (44) Stephenson, H. C., Summary of Symposium on Infectious Canine Hepatitis, *Proc. AVMA 89th Ann. Meeting*, 1952, 230-231.
- (45) ———, Four Kinds of Immunity in the Dog, Gaines Veterinary Symposium, Oct. 21, 1953.
- (46) ———, A Research Report on the Viral Diseases of Dogs, *Proc. A.A.H.A.*, May 1954.
- (47) ———, Dogs, Nutrition and Disease, *Proc. Dog Food Manufacturers Association*, Sept., 1955.
- (48) Stunzi H., Gillespie, J. H., and Celiker, A., Pathological Response of the Chorioallantoic Membrane of the Hen's Egg to Distemper Virus, *Cornell Vet.*, 1954, 44, 211-215.
- (49) York, C. J., and Baker, J. A., A New Member of the Psittacosis-Lymphogranuloma Group of Viruses that Causes Infection in Calves, *Jour. Exp. Med.*, 1951, 93, 587-604.
- (50) ———, and Baker, J. A., Vaccination for Bovine Leptospirosis, *Amer. Jour. Vet. Res.*, 1953, 14, 5-8.
- (51) ———, Aspects of Control in Bovine Leptospirosis, *Proc. U.S. Livestock Sanitary Assn. 55th Ann. Meeting*, 1951, 295-300.
- (52) ———, Complement-Fixation Test for Bovine Leptospirosis, *Amer. Jour. Vet. Res.* 1952, 13, 117-120.

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